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APPENDIX IV.

[Vide answer to starred question No. 382 asked by Sri K. Sattanatha Karayalar and Sri S. Pakkirisami Pillai at the meeting of the Legislative Assembly held on 12th September 1959, page 550 supra.]

THE INTEGRATED LIGNITE PROJECT.

The Mining Scheme.—The detailed investigation and the preparation of a detailed Project report having been completed, the mining scheme, which is the parent scheme in the Integrated Project, was sanctioned towards the close of 1956 for execution and is now in good progress. The scheme is for exploiting first an area of $5\frac{1}{2}$ square miles containing about 200 million tons of comparatively more easily mineable lignite the intention being that with the experience gained in working this area, the remaining deposits could be easily won in the future. At the designed annual output, it would take about 57 years to work the first area. The method followed is open cast mining, as practised, in Germany, utilizing continuous bucket wheel excavators for excavation, belt conveyor systems for the transport of the spoil as well as lignite, the slower spreaders for throwing back the spoil into the areas already worked; any other method would be difficult and uneconomic. As these items of specialized mining equipment would take time to manufacture and deliver, and in order to push the Project through, conventional items of earth moving equipment like scraper loaders, bottom dumpers, etc., were obtained and are now in action, excavating part of the spoil and preparing benches for the specialized mining equipment to work from, in the first mine cut which measures 6,100 feet in length, with a width of 95 per cent at the top. The development phase of the scheme consists of removal of overburden amounting to 27 million cubic yards from this first mine cut and the preparation of three benches leading down to the lignite. At the end of this development phase, which will be in about December 1960 or early in January 1961, parts of the lignite seam will be exposed, facilitating winning of the mineral beginning with modest quantities and working up to the targeted output of $3\frac{1}{2}$ million tons per annum in about the first quarter of 1962. The specialized items would be put into commission, one by one, after erection, and by the time the entire specialized equipment goes into commission, the conventional items, which would also be working, would have finished their useful lives.

As against the total depth of about 180 feet to be excavated, the excavations in the first mine cut have reached a depth of 70 feet over a fifth of the width of the cut and from the bench so prepared, the first small Bucket Wheel Excavator, the erection of which has been completed, will go into regular operation shortly after the operating personnel have been trained, in the meantime, in the operation of the machine. Excavations have reached a depth of 30 feet in another three-fifths of the cut, and 5 feet in the remaining one-fifth of the cut, part of these portions being dealt with by

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the conventional items (and the rest will be dealt with by the bucket wheel excavators). The excavations in practically four-fifths of the cut are now in hard strata of the Cuddalore sandstone and the soil has to be loosened using explosives or softened by spraying water. The total quantity of overburden removed up to the end of June 1959 is 8.6 million cubic yards.

A definite scheme for the artesian ground water control is ready and on the basis of various pumping tests, the specifications of the drills, pumps and casing pipes required have been drawn up and action initiated for procurement. The final set of tests are to be conducted shortly, pumping from some of the regular pump wells to be put down as part of the ground water control scheme, and on the results of these tests, the screens required for the pump wells, i.e., to allow the ingress of water into the wells to facilitate pumping and lowering of the pressure surface of the artesian water, will be finalized and action taken for procurement. Regular pumping under the scheme for ground water control will be called for only after the excavations have reached a depth well beyond 100 feet below the ground level. During the later stages of the development phase, and during the production phase of the mining scheme, pumping for ground water control would be a continuous process, round the clock. Stand-by pump wells fitted with pumps and stand-by diesel generating sets are being provided, to ensure continuity of pumping, in the event of the failure of the main power supply. The diesel generating sets are capable of automatic starting when the main power supply fails. No great difficulty is anticipated in controlling the artesian water.

The first small spreader is being erected according to schedule, and the major part of the conveyor belt system has been erected, also according to schedule.

In short, the mining scheme is making very good and economic progress and the progress made is slightly ahead of schedule.

The Thermal Power Generation Scheme.—A project report for the Thermal Power Generation Scheme was prepared by the planning cell of the Central Water and Power Commission in 1957. Arrangements were made for obtaining the foreign exchange required from out of the 500 million rouble credit offered by the Union of Soviet Socialist Republics. After an agreement had been concluded by the Government of India with the Government of Union of Soviet Socialist Republics, for the provision of the 500 million rouble credit, a separate contract was entered into in December 1957 by the Nevveli Lignite Corporation with Techno-export, Moscow, for the preparation, by Techno-export, of a detailed Project report in such a manner as to facilitate the speedy placing of orders for the machinery and equipment required, after the acceptance of the report. A team of Indian specialists of the Central Water and Power Commission Planning Cell was also deputed to Moscow, to participate actively in the preparation of the detailed report. Techno-export submitted their detailed Project report in

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the latter half of October 1958 and the proposals therein were generally accepted, within the couple of months stipulated in the contract.

A contract with Messrs. Techno-export, Moscow, was concluded on 6th May 1959 for the supply of plant, machinery and equipment for the Thermal Power Station. According to the terms of this contract, the equipment costing Rs. 12 crores, C.I.F., Madras, should be supplied by Messrs. Techno-export, commencing six months after the signing of the contract and ending with last quarter of 1961.

For the procurement of construction equipment excluding items available in India, required for the construction of the Thermal Power Station, three agreements were concluded with Messrs. Machino-export, Stankimport and Technomachimport, Moscow. These items of equipment are to be supplied by the above firms during the period September 1959 to June 1960.

The power station that will be put up will have five units, each of 50 MW of 50,000 KW, so that a continuous supply of 200 MW would be assured, as planned. The first unit of the Power Station is expected to be commissioned in the second quarter of 1961, by which time the mining scheme as carefully planned, would be definitely in a position to supply the lignite required. The entire power station is expected to be completed before the middle of 1962.

The Fertilizer Scheme.—Taking into account the requirements and the production contemplated in the various regions in the country, it has been decided that the Neyveli Fertilizer Scheme for the production of nitrogenous fertilizers with a fixed nitrogen content of 70,000 tons per annum, should be for the production of urea only. The Project Report for the production of 152,000 tons of urea per annum, equivalent to 70,000 tons of nitrogen per annum was prepared and approved and the scheme was sanctioned by the Government of India towards the end of December 1957, subject to credit facilities being available in respect of the foreign exchange requirements for the procurement and erection of plant and machinery. The specifications for the plant and machinery were drawn up and global tenders for the supply and erection of the plant and machinery were published in May 1958. There was a good response and the tenders received for the supply and erection of plant and machinery for the Fertilizer Plant have been scrutinized and firm orders will be placed on receipt of the approval of the Government of India. The commercial production of urea is expected to commence by about the middle of 1962, at the latest. The factory will probably be the largest urea factory in the world, producing the fertilizer by the total recycle process.

The Briquetting and Carbonising Scheme.—Apart from the detailed analyses and tests conducted in the field laboratory at Neyveli and in the Fuel Research Institute, Jealgora, bulk samples of lignite were sent abroad and analysed and tested and small quantities of raw briquettes were made and carbonized, in Germany as

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well as in the United States. Expert opinion in those countries indicated that experiments on a pilot scale in the climatic and other conditions prevailing at Neyveli itself would be desirable, before deciding on the moisture and other conditions at which the raw lignite should be briquetted and the temperature and other conditions at which those briquettes should be carbonized and generally to facilitate the drawing up of specifications for the machinery and equipment required for the scheme. Arrangements were accordingly made for the installation of a pilot Briquetting and Carbonising Plant at Neyveli, under Technical Co-operation Mission Aid. Arrivals of equipment for the pilot plant were completed only early in 1958 and the erection of the pilot was completed in record time in May 1958. Pilot experiments were completed towards the end of the year and the results fully confirmed the results of the laboratory tests previously done in India as well as the tests and analyses on bulk samples conducted abroad. The Project Report and specifications for plant and equipment for the establishment of a Briquetting and Carbonizing Plant were drawn up and approved by the Board. The approval of the Government of India for the issue of global tender notice through India Supply Mission, Washington, has also been obtained. The last date suggested to the Mission for the receipt of tenders is 25th September 1959. After the receipt and scrutiny of the tenders, Government of India's approval for the capital expenditure and foreign exchange component will be obtained and firm orders placed before the end of 1959.

The Clay Washing Scheme.—China and ball clay of excellent quality occur in the overburden strata immediately above the lignite. Plastic fire clay also occurs in large quantities. All these clays will be removed as part of the overburden. Analyses and tests conducted at Neyveli and elsewhere indicate that the china clay when washed would be of excellent quality, eminently suitable for the manufacture of ceramics, particularly high and low tension insulators, sanitaryware, crockery, etc., and for use in the textile, rubber, paper and chemical industries, which import good quality china clay from abroad. It is, therefore, proposed to undertake a modest clay washing scheme and to set up a small clay washing plant at Neyveli, at a cost of not more than about Rs. 15 lakhs.

The Project Report and specifications for the establishment of a Clay Washing Plant have been prepared and considered by the Board. The approval of the Government of India for the issue of tender notice had been obtained and tenders have been invited fixing 1st October 1959 as the last date for the receipt of tenders. After the receipt of tenders and scrutinizing them, the Government of India will be addressed for approval, and firm orders for the supply of plant and equipment will be placed thereafter.